Entrepreneurship performance indicators for employer enterprises in Portugal

Elsa de Morais Sarmento
Departamento de Economia, Gestão e Engenharia Industrial, Universidade de Aveiro
Campus Universitário de Santiago
3810-193 Aveiro, Portugal
E-mail: esarmento@ua.pt
Telephone: 00351934259520

Alcina Nunes
Escola Superior de Tecnologia e Gestão do Instituto Politécnico de Bragança
Escola Superior de Tecnologia e Gestão
Campus de Santa Apolónia - Apartado 1134
5301-857 Bragança, Portugal
Email: alcina@ipb.pt

Abstract

This study provides a description of active employer enterprises and enterprise creation dynamics in Portugal, using an entrepreneurship dataset conceived from *Quadros de Pessoal* based on the Eurostat/OECD methodology "Manual on Business Demography Statistics", for the period 1987 to 2007. Using this unique matched employer-employee micro dataset, we discuss the prevalence of some of the main stylised facts of firm creation and firm size distribution. The main contribution of this analysis is to provide detailed disaggregated evidence of the performance of employer enterprises by firm dimension, region and main economic sectors over a period of 20 years. When relevant, we resort to international data for comparison.

Keywords: Entrepreneurship, Business Demography, Performance Indicators, Employer enterprises

Subject area: Business Economics
Economia de Negocios

Entrepreneurship performance indicators for employer enterprises in Portugal[1]

1. INTRODUCTION

This work describes the dynamics of active and new employer enterprises in Portugal, using an entrepreneurship dataset conceived from *Quadros de Pessoal*, for a period of around 20 years. We start by describing the dataset and methodology, characterise the employer enterprise population in which this study is based and move on from section 3, to a more disaggregated analysis. Chapter 3 analysis firm dynamics by size class, chapter 4 by region and chapter 5 by sector. Lastly, section 6 sums up.

1.1. THE *QUADROS DE PESSOAL* DATASET

The *Quadros de Pessoal* (Employment Administrative Records) is an annual survey conducted in Portugal by the Portuguese Ministry of Labour and Social Security (*Gabinete de Estratégia e Planeamento do Ministério do Trabalho e da Segurança Social)*, which provides a rich and comprehensive matched employer-employee dataset.

Linked firm-level data is fundamental to answer questions about the relationships between entrepreneurial determinants and entrepreneurial performance, at several levels, since it allows to follow individual firms for a particular period of time, while observing their overall characteristics and related changes. The availability of longitudinal datasets is also extremely relevant for a time-series analysis of entrepreneurship, in terms of the performance and survival of specific cohorts of newly created firms over time.

The entrepreneurship database obtained from the *Quadros de Pessoal*, following the Eurostat/OECD (2007) methodology, consists of an annual average of 215,903 active employer enterprises over the period 1985-2007, with an annual average of 36,803 births and 23,743 deaths.

[1] The authors would like to thank Gabinete de Estratégia e Planeamento of the Portuguese Ministry of Labour and Social Security for the provision of data and the helpful assistance.

1.2. EUROSTAT/OECD´S METHODOLOGY

In 2007, a joint OECD-Eurostat partnership took place and new standard definitions and concepts were adopted as a basis for the collection of empirical data on entrepreneurship, culminating in the publication of a "Manual on Business Demography Statistics" (OECD/Eurostat, 2008).

Our work follows this methodology and focuses on the analysis of entrepreneurial performance indicators of enterprise creation, applied to the *Quadros de Pessoal* dataset, which is the main data source in Portugal, for the universe of employer enterprises. This is composed of all active enterprises with at least one paid employee during the period 1985 to 2007, which constitutes the so-called employer enterprise population.

According to the Eurostat/OECD (2007) definitions, the core measure of births reflects the concept of employer enterprise birth. Births do not include entries into the population which result from break-ups, spit-offs, mergers, restructuring of enterprises or reactivations of units which are dormant within a period of two years[2]. Thus, this population consists of enterprises that have at least one paid employee in its birth year and also of enterprises that, despite existing before the year in consideration, were below the one employee threshold. An employer enterprise birth is thus counted in the dataset as a birth of an employer enterprise after it recruits its first employee, while complying with the above mentioned requisites.

The application of this specific methodology implied checking the previous two years before the firm's entry in the database (while fulfilling the one employee threshold), to account for possible reactivations. This caused enterprise births to be effectively accounted for from 1987 onwards, instead of 1985[3].

Thus, the considered target indicator for the measurement of firm births is the employer enterprise birth rate[4]. The employer enterprise birth rate is based on a numerator which follows the above definition for employer enterprise births, and a denominator which consists of the population of active enterprises with one or more employees during the reference period.

[2] If a dormant unit is reactivated within two years, this is not considered a birth but a reactivation. Reactivations of enterprises are counted for the active enterprise population and not for the population of enterprise births.
[3] Although data is available since 1981, entries were not measured before 1985, due to reliability issues.
[4] The manual on "Business Demography Statistics" (Eurostat/OECD, 2007) considers three different indicators for the measurement of a firm's birth, providing higher levels of international comparability as the threshold rises.

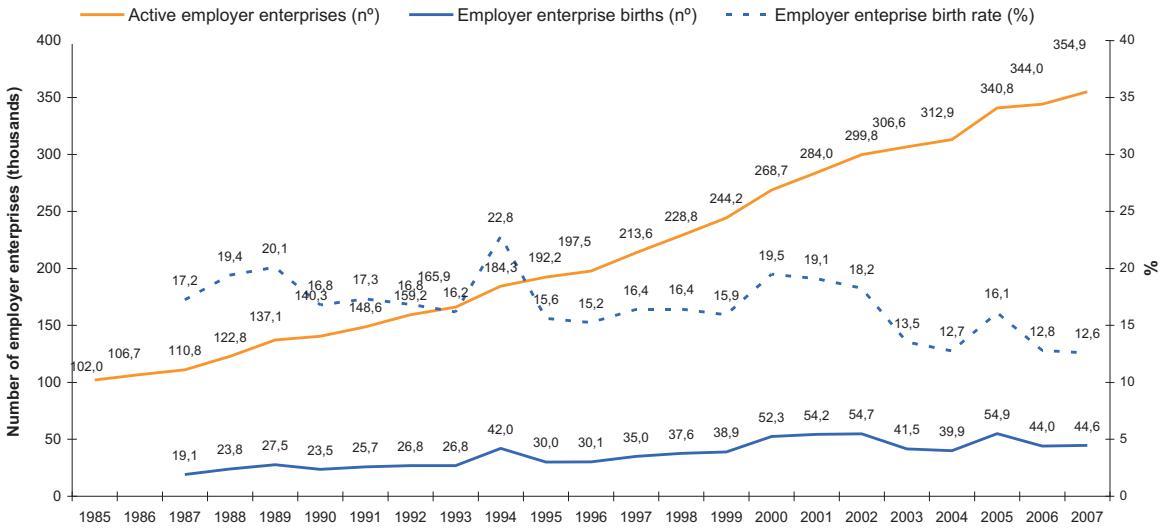
2. PERFORMANCE INDICATORS FOR ACTIVE EMPLOYER ENTERPRISES

2.1. ACTIVE EMPLOYER ENTERPRISES

The population of employer enterprises in Portugal has been growing steadily from 1985[5] to 2007 (Figure 1). The number of active employer enterprises went over the 300.000 threshold after 2003.

Based on the cycles of enterprise growth and birth, we can observe four main distinct periods,: before 1989, from 1990 to 1994, 1995 to 1999 and the period following the year 2000. In 2006, the rate of growth of employer enterprises has shown a sharp decrease, to 1,0% after a peak of 8,9% in 2005, the highest since 2001.

Figure 1 - Employer enterprise births and birth rates*, 1987-2007



Source: Own calculations based on Quadros de Pessoal, GEP, Ministério do Trabalho e da Solidariedade Social.

2.2. EMPLOYER ENTERPRISE BIRTHS

The body of research published so far on entry, has engendered a series of persistent and compelling stylised facts about firm dynamics, which are observed in a wide spectrum

[5] Although data is available since 1981, we did not measure entry before 1985 due to reliability issues.

of countries (Geroski, 1995; Bartelsman et al., 2005; Cabral, 2007; Klapper et al., 2009; Plehn-Djowich, 2009).

One of the less controversial stylised facts is that net entry is far less important than the gross flows of entry[6] and exit that generate it. It is known that there are a high number of firms that enter and exit the market every year. Most of new entrants are more involved in the search process rather than in the effective increase of the number of competitors in the market (Bartelsman, 2004).

The analysis of the growth rate of Portuguese employer enterprise births shows a considerable level of turnover[7] and volatility during the period 1987-2007. In what concerns enterprise births, four main "peaks" are clearly observable (Figure 1), 1989, 1994 with a 57% growth rate (year on year) and the highest birth rate throughout the period (22,8%), 2000 with 35% growth and 19,5% of birth rate and 2005 with a rate of growth 38% (corresponding to a birth rate of 16,1%)[8].

Overall, the rhythm of growth of enterprise births has been decreasing since the 2000 "peak", exception made for 2005, and the slight recovery occurred in 2007 (1,4%). In 2005, 16 out of 100 enterprises were new. In 2007, the birth rate was back to 2004´s level (12,6%).

In the 20 year period starting in 1987, the annual average growth rate of employer enterprise births was 4,3% (Table 1), but from 1996 to 2000, an economic recovery period, it becomes substantially higher (14,9%), particularly when compared with the less favourable period of 1990-1995 (4,9%) and also to the period ranging from 2001 to 2005 (0,3%)[9]. The average birth rate also highlights this deceleration tendency, in particular from 2001. From 1990 to 1995, it averages 17,6%, decreases to 16,7% during 1996 to 2000 and continues to fall in the following five year period (15,9%).

[6] In fact, several measures of entry can be considered. According to Siegfried and Evans (1994), a net entry measure treats exits as negative entries, forcing the structural determinants of entry to be the same as the structural determinants of exit. Gross entry on the other had, refers to entry alone. However, gross entry does not reflect entry that matters for competition measurement, as entering firms may simple displace exiting firms. Moreover, this measurement might not reflect effective entry rates, that is the amount of firms that actually survive and do not abondon the market.

[7] Turnover is a measure of firm churning. It is defined as the sum of birth and death rates, that is the percentage of active firms that either enter or exit the market in a given year.

[8] The annual growth and birth rates vary considerably along the period, in a close association with the business cycle We observe a positive correlation between the GDP at current prices and the birth rate, within the period from 1996 to 2006 (47,7%) and a significant correlation between the lagged GDP at current prices and the birth rate (96,6%, significant at 1% level) and of the lagged GDP at the previous year prices and the birth rate (70,5%, significant at 5% level). A two year lagged GDP at current prices is still significantly correlated with birth rates (61,5%, 10% level of significance).

[9] We observe a positive correlation between the GDP at current prices and the birth rate, within the period from 1996 to 2006 (47,7%) and a significant correlation between the lagged GDP at current prices and the birth rate (96,6%, significant at 1% level) and of the lagged GDP at the previous year prices and the birth rate (70,5%, significant at 5% level).

Table 1 - Average birth rate and annual average growth of births

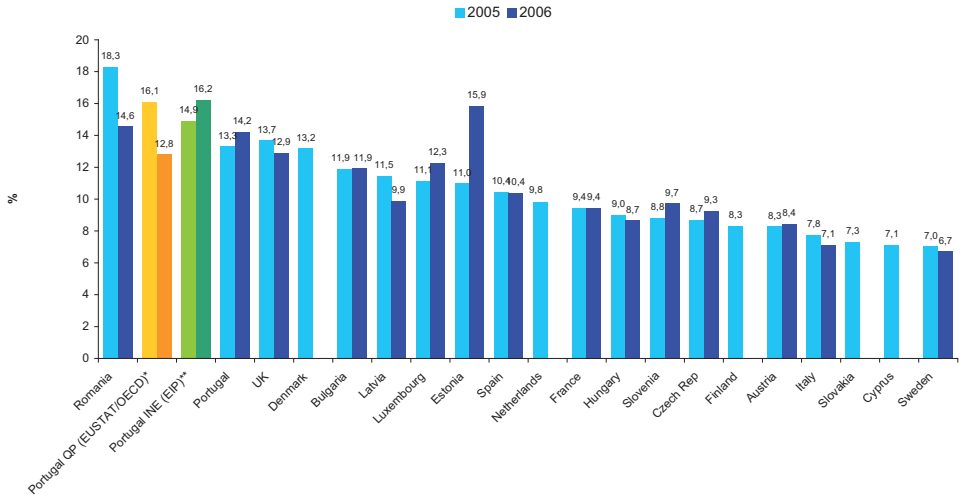
Period	Average birth rate (%)	Annual Average Growth of Births (%)
1987-2007	16,7	4,3
1987-2000	17,5	8,1
2000-2007	15,6	-2,3
1990-1995	17,6	4,9
1996-2000	16,7	14,9
2001-2005	15,9	0,3

Source: Own calculations based on Quadros de Pessoal GEP, MTSS

Various studies have documented substantial rates of entry in a number of countries (Caves, 1998; Scarpetta et al., 2002; Masso et al., 2004; Ahn, 2001; Cabral, 2007; Klapper et al., 2008). Among the European countries, Portugal has one of the highest records of new firms relatively to the stock of existing enterprises (OECD/Eurostat, 2009; Eurostat, 2009; INE 2009; Scarpetta et al., 2002; Cabral, 2007; Bartelsman, 2004).

The Structural Business Statistics data by Eurostat (2009) shows that in 2005, Portugal had the second highest business entry rate among 20 countries (Figure 2). The same rank is found if we used instead our entry rate based on *Quadros de Pessoal* (Eurostat/OECD, 2007), or the entry rate from Statistics Portugal (INE, 2009). In 2006, within a panel of 16 countries, Portugal ranks the third highest (INE, 2009).

Figure 2 - Birth rates, according to the Business Demography Statistics by Eurostat and Birth rate for Portugal according to Statistics Portugal (EIP) and *Quadros de Pessoal*



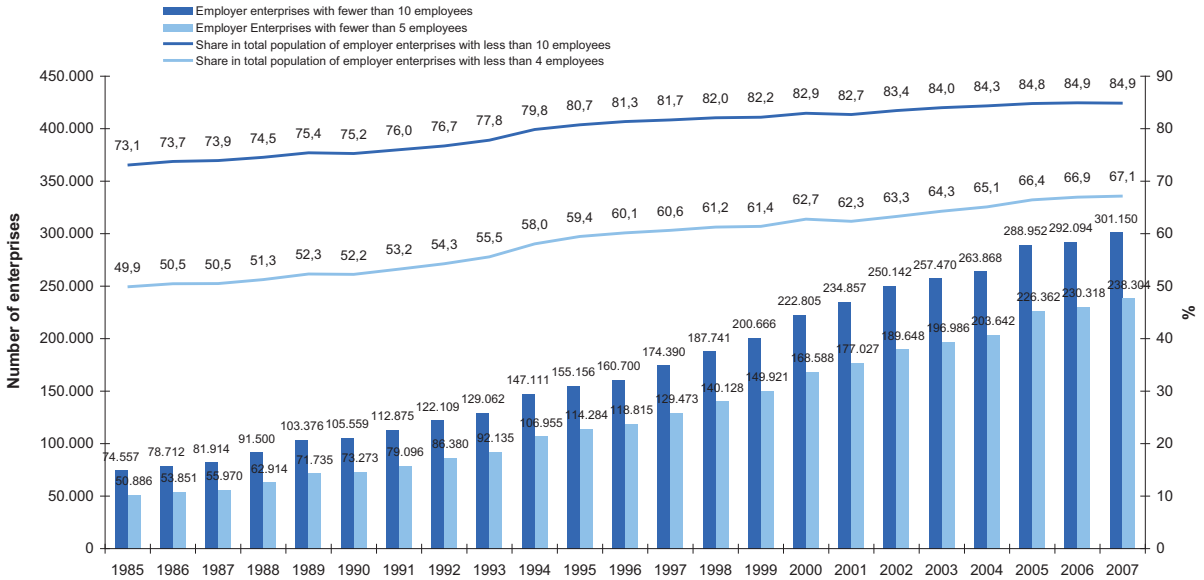
Source: Eurostat, Statistics Portugal for Portugal INE (EIP) data and own calculations based on Quadros de Pessoal GEP, MTSS for Portugal QP (Eurostat/OECD) and SDBS Business Demography Indicators from the OECD (EIP). Notes: Preliminary version of 2005 for Bulgaria, Romania, Portugal and Slovenia. * Employer enterprises according to the Eurostat/OECD methodology, based on Quadros de Pessoal. ** Statistics Portugal data, for enterprises with more than 1 paid employee (employer enterprises).

3. PERFORMANCE INDICATORS FOR ACTIVE EMPLOYER ENTERPRISES BY SIZE CLASS

The vast majority of enterprises in OECD countries (OECD, 2000) and in the European Union (Storey, 1994; Eurostat, 2009) are small and medium enterprises (SMEs). SMEs are considered a key source of dynamism and innovation in developed and emerging economies, thus making important contributions to job creation, economic growth and productivity (OECD, 2005).

In most countries, the population of firms is dominated by small and micro units (Bartelsman et al., 2005b; Bartelsman et al., 2004; Eurostat, 2009) where firms with less than ten employees represent around three quarters of the employer enterprise total population. Portugal does not seem to be an outlier. Since 1996, more than 60% of all employer enterprise firms in Portugal are micro firms[10], and more than 81% have fewer than 10 employees (Figure 3). There has been a clear tendency for small firms, with less than 10 employees, to increase its share in total population, throughout all the observed period (74% in 1986, 82% in 1997 and 85% in 2007). In 2007, 97,8% of the Portuguese enterprises present in this dataset employed less than 50 workers, compared to 95% in 1985.

Figure 3 – Active Employer Enterprises, with less than 5 and less than 10 employees and share on total enterprise population (%)



Source: Own calculations based on Quadros de Pessoal GEP, MTSS

[10] Micro firms are enterprises with fewer than 5 employees.

A second stylised fact is that entry is more likely to occur in smaller size classes (Segarra and Callejón, 2002). Births (and deaths) are traditionally more concentrated in smaller size classes, when compared to the overall firm population (OECD/Eurostat, 2009). In Portugal, small firms are created at a faster pace than larger firms, gaining share in both enterprise and employment (Sarmento and Nunes, 2009). In the period comprised between 2000 and 2007, 48.259 new enterprises were created on average per year (Table 2). Among these, 40.297 are within the 1 to 4 employee's size class (83,5% of total enterprises) and 48.011 are below the 50 employee's range (99,5%).

In 1994, the rate of growth of births was the highest of all the 1987-2007 period (57%), in particular for the size class of over 250 employees (600%). The second highest growth rate occurred in 2000 (35%), particularly in what concerns micro firms with less than 4 employees (38%).

Table 2 – Average employer enterprise births by periods and firm size

Period	Average entreprise births	Cumulative by Size Class (nº employees)					
		1 - 4	1 - 9	1 - 19	1-49	1 - 249	ALL
1987-2000	31.368	24.442	28.900	30.476	31.147	31.347	31.368
% of total	100	77,9	92,1	97,2	99,3	99,9	100,0
1987-2007	36.803	29.555	34.256	35.885	36.574	36.781	36.803
% of total	100	80,3	93,1	97,5	99,4	99,9	100,0
1992-1999	33.383	26.483	30.982	32.511	33.162	33.363	33.383
% of total	100	79,3	92,8	97,4	99,3	99,9	100,0
2000-2007	48.259	40.287	45.543	47.286	48.011	48.233	48.259
% of total	100	83,5	94,4	98,0	99,5	99,9	100,0

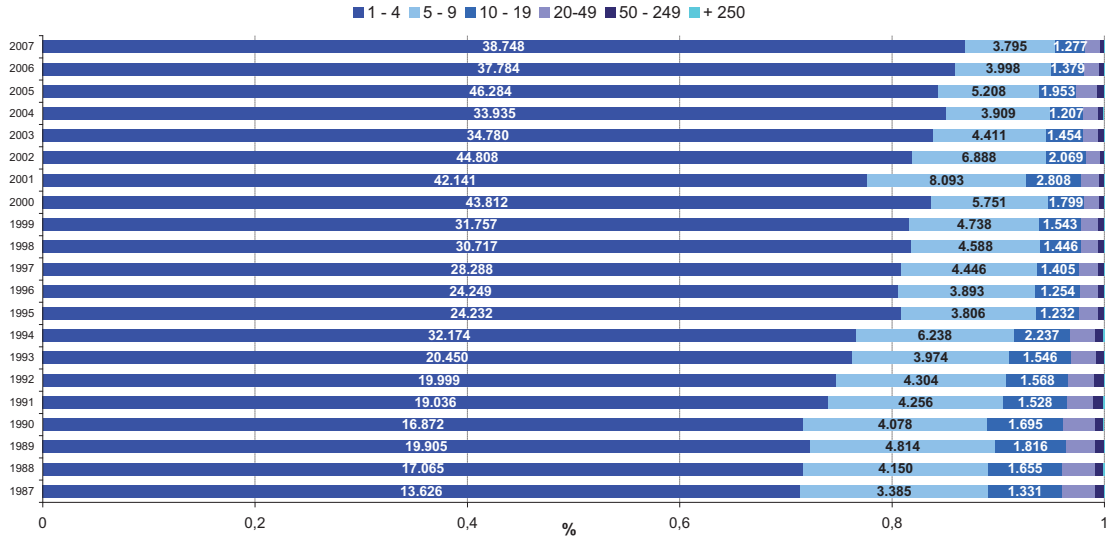
Source: Own calculations based on Quadros de Pessoal GEP, MTSS

According to Table 2 and Figure 4, most of enterprise births occurred in the 1 to 4 employees' range, in particular during the period 2000-2007 (83,5%), when compared to the previous period of 1992-1999 (79,3% of total). The annual average rate of growth of the 1-4 size class firms is 1 p.p. above the economy's average (4,1%) from 1986 to 2007, only surpassed by the over 250 employees range with 6,4% of growth.

In 1995, the 1-4 size class firms obtained more than 80% of the share of total business and have shown a steady increase, at the expense of all other business size ranges (Figure 3 and 4). The shift-share analysis done by Sarmento and Nunes (2010) shows that the greatest contributions to the rate of growth of births comes mainly from the 1-4 size class (except for the year 2001 when it was mainly due to 5-9 and 10-19 size

classes). According to Eurostat (2009), Portugal has had the highest share of enterprises births in the 1 to 4 employees' size class (average of 2005 and 2006).

Figure 4 - Employer enterprise births by size class (number and %)



Source: Own calculations based on Quadros de Pessoal GEP, MTSS

The decrease in birth rates in particular after 2001, is observed in all size classes. In 2006, enterprises with more than 250 employees suffered a sharper decline than other size class ranges (-65% of growth rate), but managed to recover in 2007 (Sarmento and Nunes, 2010).

The increasing births of firms in smaller size classes (Figure 4), combined with a smaller average entrant size (Table 3) and specialisation effects towards industries with a smaller efficient scale, have led to a decline in average firm size in Portugal over time (Sarmento and Nunes, 2009).

Table 3 - Average firm size of new employer enterprises (Births) (Average number of employees)

1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
5,41	5,58	5,76	5,66	5,83	5,1	5,23	6,06	4,11	4,1	4,08	4,27	4,11	4,31	4,24	3,88	3,97	3,82	4,03	3,38	3,37

Source: Own calculations based on Quadros de Pessoal GEP, MTSS

4. PERFORMANCE INDICATORS FOR ACTIVE EMPLOYER ENTERPRISES BY REGION

In what concerns regional enterprise growth, the region of the Algarve shows the highest growth in active enterprises throughout the period (Table 4), reaching a peak of 20.711 active enterprises in 2007 (more 1.131 than in 2006). This region also shows high volatility in active employer enterprises growth over time (e.g. from 27,7% of growth in 1989 to a low of 2,6% in 1990).

Table 4 - Annual average growth rate of active employer enterprises by NUT II

NUT II	1985 to 2007	1995 to 2000	2000 to 2007
Norte	6,2	7,1	4,4
Algarve	9,0	7,9	6,7
Centro	6,6	8,6	4,0
Lisboa	4,5	5,1	3,4
Alentejo	5,8	8,3	3,1
Açores	3,7	3,9	3,1
Madeira	6,4	7,1	4,4
Portugal	5,8	6,9	4,1

Source: Own calculations based on Quadros de Pessoal, GEP, MTSS.

Norte and Madeira display the second greatest annual average growth in the total number of active employer enterprises from 2000 to 2007 (4,4%). However, Norte is characterised by the greatest regional volatility[11], particularly from 1993 to 1998. Despite having the greatest share of active enterprises (Figure 6) and the greatest amount of small enterprises in the country, the weight of small and medium firms is the highest in Algarve (mainly due to services and construction from 2000) and Alentejo (mainly in services and agriculture and fishing sectors) (Table 5).

Table 5 - Share of enterprises with fewer than 20 employees by NUT II region (%)

Regions	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Norte	46,9	47,4	47,4	48,3	49,4	49,4	49,9	51,3	52,8	55,1	56,4	57,1	57,6
Algarve	52,8	53,4	53,9	54,7	58,2	58,4	60,6	62,0	63,8	65,7	67,0	67,0	67,7
Centro	49,3	50,4	50,5	51,2	52,4	52,2	53,7	54,9	56,2	59,1	60,6	61,4	61,8
Lisboa	51,0	51,2	51,3	51,6	52,3	52,1	53,1	53,8	54,8	57,7	59,1	59,9	60,2
Alentejo	52,9	54,8	54,7	57,1	58,6	58,5	59,7	60,2	61,9	63,6	65,3	65,1	66,7
Açores	66,6	66,2	66,4	66,4	65,2	64,5	64,9	64,8	63,8	65,1	67,6	68,4	68,2
Madeira	47,4	48,4	47,8	49,4	50,3	52,2	53,9	55,3	55,1	57,6	57,6	57,8	57,7
Portugal	49,9	50,5	50,5	51,3	52,3	52,2	53,2	54,3	55,5	58,0	59,4	60,1	60,6

Source: Own calculations based on Quadros de Pessoal, GEP, MTSS.

[11] Norte shows the highest volatility of all regions, when measured through the standard deviation. In 2006, Norte displayed a negative rate of growth, despite having the highest growth in the country in 2005 (13,7%).

Centro has maintained a steady rhythm of enterprise growth, consequently the share in total number of enterprises in the country has been kept stable. Lisboa e Vale do Tejo has seen its share of enterprises slightly reduced in the total economy (-1 p.p.), from 2000 to 2007. The evidence points to an overall trend of decreasing growth rates of the population of active employer enterprises in all NUT II regions, from 2001 onwards (Table 4 and Table 8).

By combining the regional with the size class dimension, we may also observe the predominance of small firms in most regions at the NUT II level (Tables 6 and 10) in particular in the Algarve (in 2007, 67,7% of enterprises had fewer than 20 employees, which corresponds to 58,4% of the region's employment), the Açores (69,2% share of firms and 42% of employment), and the Alentejo (66,7% share of firms and 54,9% of employment). Even when firms with fewer with less than 50 employees are considered, the Algarve and the Alentejo are still the regions with the highest share of small enterprises in 2007.

Table 6 - Share of active employer enterprises with fewer than 20 employees in total number of enterprises by NUT II region (%)

	Enterprise share of size Class of fewer than 20 employees												
Regions	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Norte	46,9	47,4	47,4	48,3	49,4	49,4	49,9	51,3	52,8	55,1	56,4	57,1	57,6
Algarve	52,8	53,4	53,9	54,7	58,2	58,4	60,6	62,0	63,8	65,7	67,0	67,0	67,7
Centro	49,3	50,4	50,5	51,2	52,4	52,2	53,7	54,9	56,2	59,1	60,6	61,4	61,8
Lisboa	51,0	51,2	51,3	51,6	52,3	52,1	53,1	53,8	54,8	57,7	59,1	59,9	60,2
Alentejo	52,9	54,8	54,7	57,1	58,6	58,5	59,7	60,2	61,9	63,6	65,3	65,1	66,7
Açores	66,6	66,2	66,4	66,4	65,2	64,5	64,9	64,8	63,8	65,1	67,6	68,4	68,2
Madeira	47,4	48,4	47,8	49,4	50,3	52,2	53,9	55,3	55,1	57,6	57,6	57,8	57,7
Portugal	49,9	50,5	50,5	51,3	52,3	52,2	53,2	54,3	55,5	58,0	59,4	60,1	60,6

Source: Own calculations based on Quadros de Pessoal, GEP, MTSS.

Table 7 - Share of employment in active employer enterprises with fewer than 20 employees in total regional employment by NUT II region (%)

	Employment share of size class 1 to 19 employees												
Regions	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Norte	34,7	35,2	36,2	37,5	38,6	40,4	41,0	43,2	43,3	43,0	43,5	42,8	42,4
Algarve	58,2	59,4	60,3	59,9	59,7	60,0	59,6	62,2	61,1	60,8	60,5	59,5	58,4
Centro	41,4	42,4	43,3	44,1	45,4	46,6	47,3	50,5	50,7	49,5	49,8	49,4	49,1
Lisboa	27,9	28,7	28,9	28,6	28,8	29,2	29,1	30,9	30,5	29,6	28,9	28,6	28,4
Alentejo	55,5	54,7	54,5	55,2	55,4	57,0	56,4	58,2	57,5	54,6	55,5	54,2	54,9
Açores	47,8	46,8	47,4	44,7	45,3	44,2	43,4	43,5	44,5	42,9	43,3	44,3	42,0
Madeira	39,2	37,7	38,4	39,5	41,0	42,9	42,5	42,0	42,1	42,0	42,5	43,2	43,2
Portugal	35,1	35,9	36,6	37,1	37,9	39,0	39,3	41,6	41,5	40,7	40,8	40,2	39,9

Source: Own calculations based on Quadros de Pessoal, GEP, MTSS.

The regional distribution of start-up rates is relatively uneven across the seven NUT II regions (Table 8). Norte is responsible for most of the enterprise births in the country, with an average share of 36% of total enterprises, throughout the 20 year period considered (with a "peak" in 2005 when it reached a 44,4% share), with a birth rate

greater than the national average (except for years 1991, 1992 and 2000). This region also presents the highest dispersion, followed by Centro and Lisboa.

Table 8 - Employer Enterprise Birth rates by NUT II (%)

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	1987-1995	1990-1995	1996-2001	2002-2007
Norte	18,6	20,5	20,4	17,4	17,1	15,9	16,7	23,4	16,1	15,5	16,8	17,1	16,7	19,3	20,6	18,8	14,3	13,4	19,9	12,9	12,8	18,4	17,9	17,9	15,3
Algarve	25,7	28,8	30,4	22,8	23,2	20,6	19,7	28,9	17,7	17,5	18,6	17,5	17,4	22,3	23,4	20,9	14,7	14,1	16,9	14,9	15,3	23,7	22,1	19,8	16,0
Centro	16,9	18,1	21,2	16,9	18,6	18,4	16,8	23,2	16,0	15,8	16,0	16,5	16,2	20,8	18,1	18,1	12,3	11,6	14,4	11,3	10,8	18,5	18,4	17,4	13,0
Lisboa	14,4	16,6	17,3	14,8	15,5	16,0	14,6	20,8	14,0	13,6	14,7	15,3	14,5	18,4	17,5	17,4	13,2	12,7	13,0	13,6	13,5	16,1	16,0	15,8	13,9
Alentejo	20,4	25,9	22,9	18,5	19,1	17,9	16,9	22,8	16,7	16,5	21,0	17,0	15,6	19,7	17,9	17,2	13,5	12,0	14,5	12,1	11,8	19,9	18,6	18,0	13,5
Açores	18,9	18,3	17,0	15,1	16,7	16,1	13,7	20,3	15,3	16,0	13,2	12,8	14,5	15,2	16,8	17,4	13,7	13,4	12,4	12,5	11,4	16,8	16,2	14,8	13,4
Madeira	15,9	16,6	17,4	16,6	16,9	17,6	17,7	25,1	17,6	16,3	15,9	17,2	17,5	17,4	19,4	18,3	16,6	14,8	13,2	13,6	12,0	18,3	18,8	17,4	14,6
Total	17,2	19,4	20,1	16,8	17,3	16,8	16,2	22,8	15,6	15,2	16,4	16,4	15,9	19,5	19,1	18,2	13,5	12,7	16,1	12,8	12,6	18,0	17,7	17,3	14,3

Source: Own calculations based on *Quadros de Pessoal* GEP, MTSS

Colantone and Sleuwaegen (2008), when analysing entries and exits in eight European countries, point out that globalisation is bringing an increasing level of risk, tougher competitive pressure and increasing barriers to entry the market for potential entrepreneurs, which has resulted in declining entry rates.

Most NUT II regions follow the country's general trend of decreasing birth rates, in particular after 2000, a phenomena also observable by the decreasing annual average growth rates of enterprise births (Table 9). The Algarve is the only region that manages to dispute this tendency and maintain a positive annual growth rate of enterprise births, during the period 2000 to 2007 (1,0%).

Table 9 - Annual average growth rate of employer enterprise births by NUT II

NUTII	1987-2007	2000-2007
Norte	4,3%	-1,5%
Algarve	6,2%	1,0%
Centro	4,6%	-5,3%
Lisboa e Vale do Tejo	4,3%	-1,1%
Alentejo	3,1%	-4,2%
Açores	1,1%	-1,0%
Madeira	4,9%	-1,1%
Portugal	4,3%	-2,3%

Source: Own calculations based on *Quadros de Pessoal* GEP, MTSS

In 1993, a year of economic downturn, the sharp decrease in birth rates was felt most severely in Lisbon. According to the shift-share decomposition provided by Sarmento and Nunes (2010), this region depicts a negative contribution to the growth of enterprise births followed by Centro, Açores, Alentejo and the Algarve.

The 1994 peak in enterprise births was mostly due to the contributions of Norte (20,8 p.p. of the overall 56,6% of birth growth), Lisboa (15 p.p.) and the Algarve (4 p.p.), which experienced the highest birth rate in the country. According to the shift-share analysis mentioned previously, the peak of 2000 is explained by the contribution of enterprise births in Centro (10 p.p. to an overall birth growth of 34,6%), Norte (9,7 p.p.) and Lisboa (9,2 p.p.).

By combining the geographical with the size class dimension, we may observe the preponderance of small firms births in most regions (Table 10), in particular in Algarve (above 98,1% of enterprises are born with fewer than 20 employees throughout the period), Alentejo (above 97,7%), Centro (97,2%) and the Açores. Over the period, Norte is the region where relatively fewer firms are born with fewer than 20 employees.

Table 10 - Share of new enterprises with fewer than 20 employees by NUT II region (%)

Regions	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Norte	96,8	97,5	96,9	97,4	97,3	97,7	97,4	98,0	97,4	97,6	97,4	97,8	98,0
Algarve	98,7	98,9	98,7	98,7	98,4	98,9	98,8	99,0	98,8	98,8	98,1	98,4	98,5
Centro	98,1	98,1	98,2	98,5	98,4	98,7	98,5	99,0	98,7	98,6	97,2	98,8	98,8
Lisboa	97,8	97,5	97,6	97,4	97,5	97,7	97,4	97,9	97,8	97,7	97,1	97,9	98,1
Alentejo	98,7	97,7	98,6	98,6	98,8	98,9	98,6	98,7	98,7	98,5	98,1	98,4	98,4
Açores	98,7	99,0	98,2	99,1	99,4	97,8	97,8	97,4	98,6	98,3	98,3	98,7	98,1
Madeira	97,0	96,4	98,0	97,6	97,5	98,1	96,6	97,8	98,3	97,4	98,9	97,9	97,3
Portugal	97,7	97,7	97,6	97,8	97,8	98,1	97,8	98,3	98,0	98,0	97,4	98,1	98,2

Source: Own calculations based on Quadros de Pessoal GEP, MTSS

Average firm size of entrants has also been decreasing throughout the country's regions, except for size class of 20-49 employees which, despite the natural fluctuations over this 12 year period, has been able to show systematic recoveries and maintain its average range between 25 and 31 employees throughout the period.

Until 2003, the Açores had the smallest sized enterprises, in the size class 1-4 (1,8 employees on average). From 2005, it was overthrown by Norte (1,6 employees on average). On the other hand, Lisbon has the biggest sized enterprises in the country in the size class of over 250 employees, although average firm size has been decreasing considerably in recent years (1645 employees on average in 1989, 2628 in 2000 and 624 in 2007), followed by Centro and Norte, which recovers in 2007, the second place in this size class.

In higher birth rate years in Portugal, we observe an overall increase in firm dimension, but there is some heterogeneity throughout the Portuguese regions, in particular during the "peak" years of 2000 to 2002. The year of 1994, also characterised by a sharp increase in birth rates, shows a more homogenous regional impact on the average

enterprises´ size[12] (except for Centro and the Açores), compared to the "peak" of 2000 to 2002, which had a more localised impact in respect to firm size increase in Lisbon, Açores and Madeira.

5. PERFORMANCE INDICATORS FOR ACTIVE EMPLOYER ENTERPRISES BY SECTOR

The increasing presence of small firms in Portugal is considerable and visible throughout all broad economic sectors, both in terms of the number of enterprises and the number of employees (Table 11). During the period of 1995 to 2007, 92,5% of total enterprises in the economy employed fewer than 20 workers, with all sectors but manufacturing (81,5%), having a share over 90%.

Table 11 - Share of enterprises with fewer than 20 employees, in the total population of firms and in total employment[13]

(Enterprises with fewer than 20 employees as a % of sector's total)

	Enterprises					Employment				
	Total economy	Agriculture and Fishing	Manufacturing	Services	Construction	Total economy	Agriculture and Fishing	Manufacturing	Services	Construction
1995-2007	92,5%	96,5%	81,5%	94,7%	92,9%	39,1%	67,2%	25,1%	42,9%	52,1%
1995-1999	91,5%	95,6%	79,6%	94,6%	92,2%	36,6%	61,7%	22,5%	43,8%	46,5%
2000-2007	92,9%	96,9%	82,6%	94,8%	93,1%	40,4%	70,0%	26,8%	42,5%	54,4%

Source: Own calculations based on Quadros de Pessoal, GEP, MTSS.

From the first (1995-1999) to second sub-period (2000-2007), the number of small enterprises is rising in all sectors, where manufacturing displays the highest increase in this size class, above the total economy's, indicating a faster reduction in enterprise size (Table 12).

The increase of small firms in Portugal is also a consequence of declining average firm size, which is extended to all broad sectors of the economy, particularly to the manufacturing sector. While average size of manufacturing firms still is at least twice as

[12] This is also due to its more limited impact over time, when compared to the remaining "peaks" of enterprise births. Still, enterprises which were created in 1994, managed to create peaks of survival during the following years, still visible 5 years later (GEE, 2010).

[13] Sections A to P of ISIC Revision 3 were considered for the total economy. Data is only considered after 1995 due to the start of European System of Accounts of 1995, and up to 2006 due to the problems of compatibility with Classification of Economic Activities Revision 3, introduced in 2007.

large than services (Table 12 and A.1), it tends to decrease faster between the two sub-periods than in the remaining sectors (from 20,8 average employees during 1995-2000 to 17,4 after 2000).

The construction sector, which lived through an expansion period, both in terms of share of enterprises and employment between 1995 and 2000, shows a marked decline after 2003 in terms of enterprises and employment share, and average size.

Table 12 - Average firm size by broad sectors and periods (Number of employees)

	Total economy	Agriculture and Fishing	Manufacturing	Services	Construction
1995-2007	10,0	4,9	18,9	8,4	8,9
1995-2000	10,9	5,5	20,8	8,6	9,5
2000-2007	9,4	4,5	17,4	8,3	8,3

Source: Own calculations based on Quadros de Pessoal, GEP, MTSS.

In line with the literature, the employment share of small firms is lower than its share in the total number of firms (Table 11). In parallel to enterprise behaviour, the share of employment in enterprises with fewer than 20 employees also rises in all sectors of activity, except in services.

From 1995 to 2007, small firms with fewer than 20 workers employed 39,1% of the total workforce in the dataset. It is in the "Agriculture and Fishing" and in the "Construction" sector that small firms account for the largest share of employment.

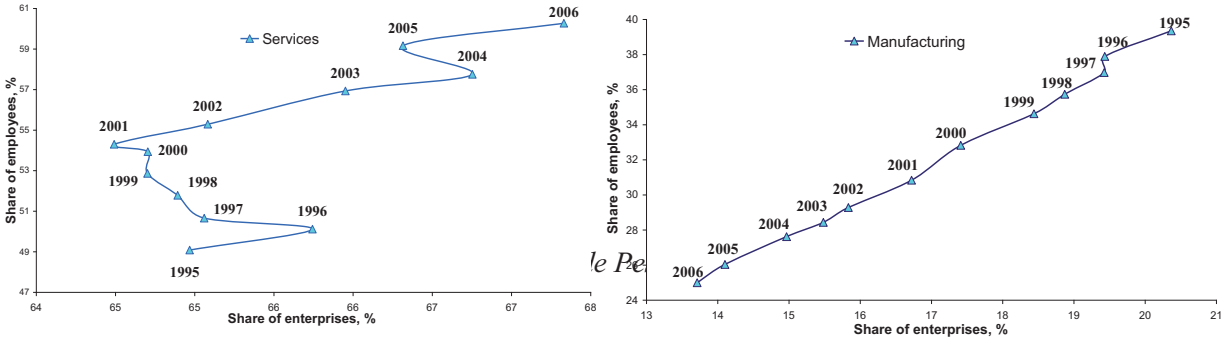
This is not only influenced by the level of economic activity[14], but also by the dynamics of entry and exit in the market and by the industry structure, where an economy with a growing service sector and a declining influence of the manufacturing sector, such as Portugal, is more likely to display a growing share of both SMEs and of SME´s in total employment.

The growing importance of the service[15] sector and the decline of the manufacturing sector are clearly observable from Figure 8. The service sector leads in the number and share of active employer enterprises, especially after 2001 (Table A.1) and particularly

[14] We have found that the economic cycle highly correlates with enterprise births and deaths cycles. In different regression models we have found that GDP is consistently a statistically significant variable.
[15] In most OECD countries, the service sector accounts for more than 60% of value added and employment (Ahn, 2001).

in terms of its share of employment[16] (60,3% in 2006), but holds the lowest average firm size of the three main sectors (8,4 average employees per firm during 1995 to 2007, Table 12). It displays a tendency to reinforce its importance in the Portuguese economy, as indicated by the figure below and Table A.1.

Figure 8 - Share of enterprises and employees in total economy, by broad sectors, 1995-2006



Turning to annual average growth rates, at a more disaggregated level, we observe clear disparities among the Portuguese main sectors (Table 13). All broad sectors, except Agriculture and Fishing show a decrease in their annual average growth rates from the first to the second sub-period.

During the first sub period[17], one of the most dynamic sectors has been "Construction", which displays after 2001, a slowdown in enterprise annual average growth (2,0%). The service sector shows more dynamism in most sectors at one letter level of the CEA[18], when compared to manufacturing.

[16] By 2002, the share of the service sector amounted to about 70% of total value added in most OECD economies, and this has been increasing considerably over time (OECD, 2005).
[17] This disaggregation is only provided after 1995 due to the start of SEC 95, and up to 2006 due to the problems of compatibility with CAE Rev. 3 after 2007.
[18] Classification of Economic Activities (CEA).

Table 13 - Annual average growth of active employer enterprises by sector at one letter level of the Classification of Economic Activities, Rev. 2.1 and by broad sectors (%)

Sectors	1995-2006	1995-2000	2001-2006
Agriculture, farming of animals, hunting and forestry	7,6	5,6	10,2
Fishing	15,5	1,4	34,1
Mining and quarrying	1,5	3,5	-1,8
Manufacturing	1,7	3,6	-0,1
Production of electricity, of gas and of water supply	8,6	7,5	8,4
Construction	7,9	13,1	2,0
Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	3,6	4,7	2,5
Hotels and restaurants	4,8	6,4	3,5
Transport, storage and communication	9,4	11,3	6,4
Financial intermediation	7,0	7,4	6,5
Real estate, renting and business activities	10,6	12,9	8,5
Public administration and defence; compulsory social security	22,7	4,6	46,0
Education	7,6	6,7	8,7
Health and social work	8,7	10,6	7,1
Other community, social and personal service activities	8,5	8,5	8,8
Total	5,4	5,5	3,9
Agriculture and Fishing	7,9	5,5	11,2
Manufacturing	1,7	3,6	-0,1
Services	5,8	6,8	4,8
Construction	7,9	13,1	2,0

Source: Own calculations based on *Quadros de Pessoal* , GEP, MTSS.

A third stylised fact is that turbulence is usually higher in services than in the manufacturing sector (OECD/Eurostat, 2009; Bartelsman et al., 2005; López-Garcia and Puente, 2006). For the period 2005 and 2006, the Eurostat/OECD (2009) observes that birth (and death) rates are significantly higher in the service sector for the vast majority of countries.

According to *Quadros de Pessoal*, the service sector has been reinforcing its position as the leading sector in the Portuguese economy, a phenomenon shared with a considerable amount of countries (OECD, 2005; Ahn, 2001), given the increasing reliance on intangibles, information technologies and globalisation (Colantone and Sleuwaegen , 2008), among other factors (Sarmento and Nunes, 2009).

In 2006, the service sector was responsible for 71,6% of all start-ups (+3 p.p. than in 1996), as depicted in Table 8, and 62% of total employment generated by new firm entries (+6 p.p. than in 1996), greater than the weight of this sector's overall employment in the economy (60,3% in 2006 and 50,1% in 1996) (Sarmento and Nunes, 2009).

Table 14 - Distribution of enterprise births, by broad sectors[19] (share, %)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Agriculture	4,5	4,6	5,2	4,1	3,8	3,5	3,5	3,7	3,9	4,3	14,9	5,8
Manufacturing	15,5	14,6	15,0	14,3	14,1	12,2	14,2	11,6	10,4	9,8	8,7	9,2
Services	68,9	68,9	66,1	65,9	64,7	65,4	59,5	65,2	71,4	72,4	64,5	71,6
Construction	11,1	11,9	13,7	15,7	17,4	19,0	22,8	19,4	14,2	13,5	11,9	13,3

Source: Own calculations based on Quadros de Pessoal GEP, MTSS

Concerning birth rates, we observe considerable variations across Portuguese sectors (Figure 9). From 1998 to 2001, the most dynamic sector was "Construction", where birth rates surpassed 20%, accompanied by an increasing weight in the share of total births. From 1996 to 2001, the Construction sector gave the greatest contribution to the growth of enterprise births in the country, which is still maintained in 2003 and 2004 (Sarmento and Nunes, 2010).

In 2001, 29 out of each 100 were new enterprises in the Construction sector (which represented 4,4% of total enterprises in the country in 2001)[20]. A similar trend can be found in other countries, particularly in Spain (Consejo Superior de Cámaras de Comercio en España, 2003).

From 1996, the service sector is ranked as having the second highest birth rate[21], taking the lead from 2003 onwards (in 2005, 16 out of 100 were new service enterprises). According to OECD/Eurostat (2009), in 2006, Portugal had the highest birth rate in the service sector, above 20 other countries.

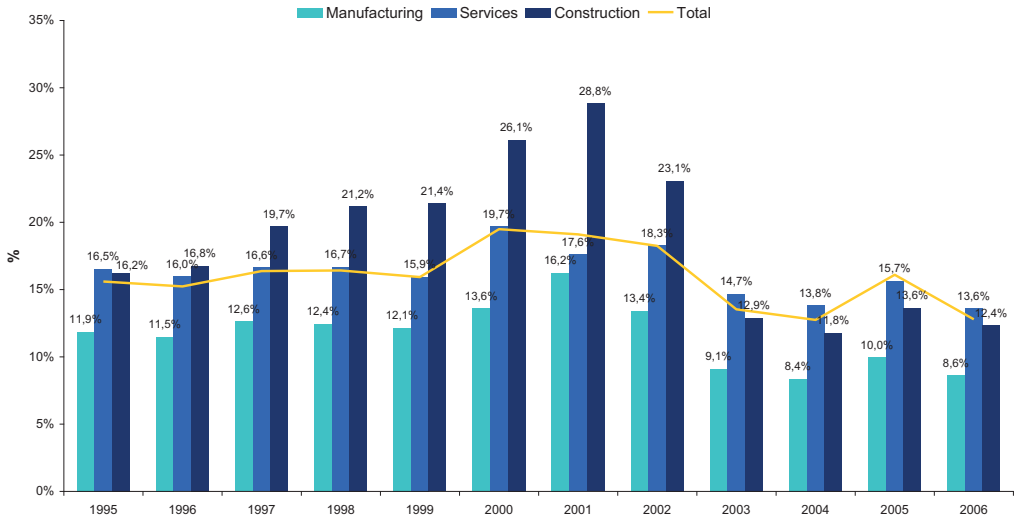
Manufacturing birth rates have been decreasing since 2001, with a slight recovery in 2005, which was extended to all broad sectors.

[19] Broad sectors are services, manufacturing, Construction and Agriculture (and Fishing, that is the primary sector). Data is provided from 1995 only, due to the start of European System of Accounts in 1995, and up to 2006 due to the problems of compatibility with Classification of Economic Activities Revision 3, introduced in 2007.

[20] In the year following 1995, survival rates for the construction sector were the highest of all broad sectors during the 3 first years of activity (1996-1998). From 1999 onwards, firm survival in the service sector overcame survival in the construction sector, that kept on falling at a relatively higher rate than in other sectors (for the survival cohort 1995-2005) (Sarmento and Nunes, 2009).

[21] Nunes and Sarmento (2010) show that industries characterised by high entry rates at the moment of birth, find post-entry survival more difficult.

Figure 9 - Birth rates by broad sectors, 1995-2006 [22]



Source: Own calculations based on Quadros de Pessoal GEP, MTSS

Births of small enterprises are concentrated in the service sector (OECD/Eurostat, 2009). In Portugal, more small enterprises (with fewer than 20 employees) are born in the Services sector relatively to other sectors, with the exception of Agriculture and Fishing, where firms are born predominantly in this size class (Table 15).

The proportion of firms born below this threshold is higher than the total weight of these enterprises in the population, revealing that newcomers have on average a smaller size than incumbents. This is also verified for all sectors and time periods (Sarmento and Nunes, 2009).

From the first sub-period to the second (Table 15), there are proportionately more enterprises being born with fewer than 20 employees in all sectors, particularly in manufacturing, which reveals the greatest decrease in average size. Throughout the period, entrants (and exiting firms) are smaller than the average size of firms already in operation[23].

[22] This disaggregation by NUT II is only provided after 1995 due to the start of SEC 95, and up to 2006 due to the problems of compatibility with CAE Rev. 3 after 2007.

[23] The small size of new entrants is a relevant factor when attempting to explain their lower survival changes that is, the high mortality rate that affects many small sized businesses in their first years of operation (Nunes e Sarmento, 2010).

Table 15 – Average share of enterprises births with fewer than 20 employees (New enterprises with fewer than 20 employees as a % of total by sector)

	< 20 employees					
	Agriculture and fishing	Manufacturing	Services	Construction	Total (Births) (sectors A-Q)	Total (enterprises) (sectors A-Q)
1995-2007	99,1%	94,3%	98,5%	97,8%	97,9%	92,4%
1995-1999	98,8%	93,8%	98,5%	97,8%	97,7%	91,5%
2000-2007	99,2%	94,6%	98,5%	97,9%	98,0%	92,8%

Source: Own calculations based on *Quadros de Pessoal* GEP, MTSS

At a more disaggregated level, the sectors with the highest average births during 1995-2006 (at one letter level of the Classification of Economic Activities, Rev. 2.1.) are "Public administration and defence; compulsory social security", "Fishing", "Agriculture, farming of animals, hunting and forestry", "Real estate, renting and business activities" and the "Construction" sector, which averages 18,4% during the period. From 2001 to 2006, the same sectors rank the highest birth rates (Sarmento and Nunes, 2010).

The same rankings are maintained when we consider a sector analysis by NUT II for the sub-period 2000 to 2006 (Sarmento and Nunes, 2010). In the Açores and Alentejo, the fishing activity still engenders a considerable creation of enterprises. In Madeira, tourism might be the main responsible for the increase in enterprise creation in the Real Estate[24] and Construction sectors.

From 1995 to 2000, Real Estate, mostly in the Norte and Lisbon regions, and Construction are the prevailing sectors in enterprise creation. The Construction sector, which has grown considerably in regions such as Algarve, Madeira, Açores, Alentejo and Lisboa, faces a slowdown during the following sub-period (2000-2006), both in enterprise and employment creation.

The broad Manufacturing sector[25] shows the smallest birth rates and employment generation, especially after 2000 (Sarmento and Nunes, 2009). From 1995 to 2000, the "Manufacturing" sub-sector has the lowest birth rates in Lisboa, Alentejo and Centro, while "Mining and Quarrying" grows below the country's average in Lisbon, Norte and Alentejo.

[24] During the period 1995-2000, we can observe the importance of off-shore activities, as the financial intermediation sector plays a very important part in enterprise creation.
[25] Sectors C, D and E of CAE Rev. 2.1.

From 2000 to 2006, the "Mining and Quarrying" sub-sector faces an overall higher slowdown than Manufacturing (10,7% and 11,3%, respectively). Manufacturing is particularly hit by smaller birth rates, in regions such as Alentejo, Centro, Norte and Lisboa.

5. FIRM SIZE DISTRIBUTION

There is a considerably large amount of evidence that the number of micro and small sized firms have been increasing relative to medium and large scale enterprises (Schaper et al., 2008; Storey, 1996; Loveman and Sengerberger, 1991; OECD, 2005; OECD, 2000) and also of the shift in the firm size distribution towards smaller production units, which has been occurring since the 1970s, after years of dominance of economies of scale in production (Ribeiro, 2007). Given the evolution of employer enterprises by size class, illustrated in the previous sections, we should expect these dynamics to have considerable impact in Portugal.

In order to assess if the increasing presence of smaller firms is indeed affecting the composition of the population of firms, an analysis of the size distribution of employer enterprises was considered. Following Cabral and Mata (2003), we analysed the firm size distribution for our subset of firms based on *Quadros de Pessoal*[26]. We applied a nonparametric estimation method, a gaussian kernel density smoother with a bandwidth of 0,5 to the logartithm of firm size to test if firm size (expressed as the log of the employment of the firm) distribution is stable and approximately lognormal for the population of active enterprises.

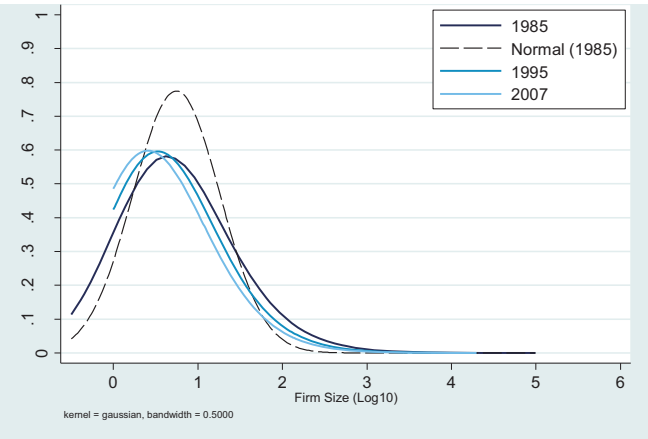
On the one hand, we have found a firm size distribution skewed[27] to the right, with a distinct shape from the Normal distribution, in line with Cabral and Mata's (2003) results. On the other, we observe that this distribution is not stable over time (Figure 10), showing an increasing prevalence of smaller firms in the population of employer

[26] It is important to keep in mind that the type of distribution depends heavily on the data source considered (Cabral, 2007). Cabral and Mata (2003) tested the hypothesis that more comprehensive data sets (which consider micro data as *Quadros de Pessoal* does) are described by firm size distributions that evolve over time and are skewed to the right, thus being distinct from the lognormal distribution curve.

[27] It has long been noted that the distribution of firms is skewed (Ijiri and Simon, 1977; Klette and Kortum, 2004; Cabral, 2007; Schaper et al., 2008), in particular when the whole population of firms is considered and the data did not result from a random sample taken from the total population, but until recently these conclusions were drawn essentially from the study of specific industries or sectors, focusing in shorter periods of time. More recently, the availability of large micro data sets for many industrialized countries allowed to uncovered that firm sizes are likely to be distributed as a Pareto distribution, instead of a log-normal (Axtell 2001, Gaffeo et al. 2003).

enterprises. The whole firm size distribution has indeed been shifting to the smallest size classes, where smaller units are increasingly prevalent in the population. These results are also confirmed by looking at three different firm cohorts.

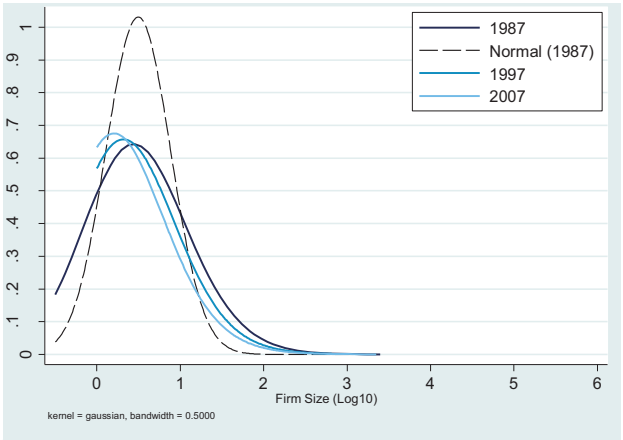
Figure 10 – Firm size distribution for 1985, 1995 and 2007 cohorts of enterprises



Source: Own calculations based on *Quadros de Pessoal*, GEP, MTSS.

A last stylised fact, points to the creation of new firms being in general of a smaller size than incumbents, thus making the firm distribution right skewed, with proportionally more small than large firms with respect to the lognormal distribution (Figure 11). We also find that firm size distribution of employer enterprise births is skewed to the right and is shifting over time to smaller sized firms, in line with the total economy. This is also observable for enterprises births and deaths and for broad sectors[28].

Figure 11 - Firm size distribution of 1985, 1995 and 2005 cohorts of entrants



Source: Own calculations based on *Quadros de Pessoal* GEP, MTSS

[28] This last piece of evidence is not included in the present article, but is available at request.

6. MAIN CONCLUSIONS

The population of active employer enterprises has been growing steadily in Portugal over more than 20 years, especially due to the contribution of smaller sized firms, but a decreasing growth trend emerges after 2001, visible throughout all broad sectors and regions. We can identify four distinct periods, based on growth rates and on the cycles of enterprise births, before 1989, from 1990 to 1994, 1995 to 1999 and after 2000. Employer enterprise births have increased at an annual average growth rate of 4,3%, from 1987 to 2007. After 2000, birth rates have been slowing down throughout all regions, sectors and size classes. Despite this fact, Portugal has one of the highest records of new firm creation relatively to the stock of existing enterprises, even when other universes and methodologies are considered.

The increasing predominance of small and medium sized firms is clearly observable. In 2007, 98% of the Portuguese enterprises present in *Quadros de Pessoal*, employed less than 50 workers. This is due to both structural effects, such as the increasing dominance of the service sector in the economy, in terms of the number of enterprises and employees, and to the gradual decrease of average firm size in all broad sectors.

Smaller enterprises are being created at a faster pace, in particular in the 1-4 size class, in most regions and in all economic sectors. We also observe a decline in the average size of enterprise births over time, from 5,41 in 1987 to 3,37 employees in 2007, on average.

Portugal is increasingly a service-based economy, where the service sector occupies the pole position in enterprise creation since 2003. According to the OECD/Eurostat, in 2006, Portugal had the highest birth rate in the service sector, above 20 other countries. The Construction sector had the highest birth rates from 1996 to 2001 and the highest contributions to enterprise birth, but suffered a sharp decline after 2001, together with the Manufacturing sector.

Over a period of more than 20 years, we observe an overall decrease in the average size of employer enterprises in Portugal, which is extended to all broad sectors, NUT II regions and entrants in the market. We verify that total and enterprise births firm size distribution is right skewed, shifting to the smallest size classes over time, with proportionally more smaller than larger firms.

BIBLIOGRAPHY

Ahn, S. (2001), “Firm dynamics and Productivity Growth: a review of micro evidence from OECD countries”, OECD Economics Department Working Paper n. 297, Paris.

Axtell, R.L. (2001), "Zipf Distribution of U.S. Firm Sizes", Science 293:5536, pp. 1818-1820.

Bartelsman, E.J., S. Scarpetta, and F. Schivardi, (2005), "Comparative Analysis of Firm Demographics and Survival: Evidence from Micro-level Sources in OECD Countries", Industrial and Corporate Change, 14(3): 365–391.

Bartelsman, E.J., J. Haltiwanger, and S. Scarpetta, (2004), "Microeconomic Evidence of Creative Destruction in Industrial and Developing Countries", The World Bank Policy Research Working Paper Series 3464.

Cabral, L. (2007), “Small firms in Portugal: A selective Survey of Stylized Facts, Economic Analysis and Policy Implementation”. Portuguese Economic Journal, 6(1): 65-88.

Cabral, L. and J. Mata (2003), “On the evolution of the firm size distribution: facts and theory”, The American Economic Review, 93(4): 1075 - 1090.

Caves, R.E. (1998), "Industrial Organization and New Findings on the Turnover and Mobility of Firms", Journal of Economic Literature 36: 1947-1982.

Colantone, Italo and L. Sleuwaegen (2008), "Entry and exit of firms in a global economy: a cross-country and industry analysis," Vlerick Leuven Gent Management School Working Paper Series 2007-36, Vlerick Leuven Gent Management School.

Consejo Superior de Cámaras de Comercio, Industria y Navegación de España, (2003) “Creación y consolidación de empresas. Políticas de apoyo”, Servicio de Estudios.

Eurostat (2009), "Business Demography: employment and survival", Statistics in focus, 70/2009.

Eurostat/OECD (2007), "Eurostat/OECD Manual on Business Demography Statistics".

Gabinete de Estratégia e Estudos (2010), "Estatísticas de Bolso da Dinâmica Empresarial", GEE, Ministério da Economia, da Inovação e do Desenvolvimento.

Gaffeo E., Gallegati M. and A. Palestrini (2003), On the Size Distribution of Firms. Additional Evidence from the G7 Countries, Physica A, 324:117-123.

Geroski, P. (1995), "What do we know about entry?", International Journal of Industrial Organization, Vol. 13, p. 421-440.

Ijiri, Y. and H. A. Simon (1977), "Skew Distributions ans the Sizes of Business Firms", North-Holland.

Instituto Nacional de Estatística (2009), "Demografia de Empresas 2004-2007, O Empreendedorismo em Portugal - Indicadores sobre a Demografia das Empresas", Destaque.

Klapper, Leora, A. Lewin and J. M.Q. Delgado (2009) “The impact of business environment on the business creation process”, The World Bank Policy Research Working Paper Series 4937.

Klapper, L., R. Amit and M. Guillén (2008), "Entrepreneurship and firm formation across countries" The World Bank Policy Research Working Paper Series 4313.

Klette, Tor Jakob and Samuel S. Kortum (2002), "Innovating Firms and Aggregate Innovation," CEPR Discussion Papers 3248, C.E.P.R. Discussion Papers.

López-Garcia, P. and Puente, S. (2006) "Business demography in Spain: determinants of firm survival", Documentos de Trabajo n. 608, Banco de España.

Masso, J., R. Eamets and K. Philips (2004), "Creative Destruction and Transition: The Effects of Firm Entry and Exit on Productivity Growth in Estonia", Discussion Paper Series, Institute for the Study of Labor (IZA).

Nunes, A. and E. Morais Sarmento (2010), "Business Demography Dynamics in Portugal: a semi-parametric Survival Analysis", 2010 Hawaii Global Conference on Business and Finance, Conference proceedings.

Nunes, A. and E. Morais Sarmento (2009), "A non parametric survival analysis of business demography dynamics in Portugal", Boletim Mensal de Economia Portuguesa, Ministério da Economia, da Inovação e do Desenvolvimento e Ministério das Finanças e da Administração Pública, Dezembro de 2009.

OECD (2000), "OECD Small and medium enterprise outlook", Paris.

OECD (2005), "The 2005 OECD SME and Entrepreneurship Outlook", Paris.

OECD/Eurostat (2009), "Measuring Entrepreneurship A Collection of Indicators, 2009 Edition", OECD/Eurostat Entrepreneurship Indicators Programme.

Ribeiro, E. P. (2007) "The Dynamics of Firm Size Distribution", Brazilian Review of Econometrics, Vol. 27, nº 2.

Sarmento, E. Morais e A. Nunes (2009), "Entrepreneurship Performance Indicators", Workshop do NIPE: Economic Analysis using Linked Employer and Employee Data, Universidade do Minho.

Sarmento, E. Morais e A. Nunes (2010), "Employer enterprise creation in Portugal", Boletim Mensal de Economia Portuguesa, Ministério da Economia, da Inovação e do Desenvolvimento e Ministério das Finanças e da Administração Pública, Março de 2010.

Scarpetta, S., P. Hemmings, T. Tressel and J. Woo (2002), "The role of policy and institutions for productivity and firm dynamics", OECD Economics Department Working Papers, n. 329.

Schaper, M. Dana. L. P., R. Anderson, P. W. Moroz (2008), "Distribution of firms by size: observations and evidence from selected countries", International Journal of Entrepreneurship and Innovation Management, Vol. 8, n. 6, 2008.

Segarra, A. and M. Callejón (2002), "New firm's survival and market turbulence: new evidence from Spain", Review of Industrial Organization 20: 1-14.

Siegfried J. and Evans L. (1994) "Empirical studies of entry and exit: a survey of the evidence", Review of Industrial Organization, 9, 121–156.

Storey, D. ed. (1994), "Understanding the small business sector", Thomson Learning.

ANNEX

Table A.1 - Average firm size across industries and share of enterprises and employment by broad sectors in total economy (%)

Broad sectors	Year	Mean employment	Standard deviation of employment	Coefficient of variation	Share of enterprises in total economy (%)	Share of employment in total employment (%)
Agriculture and Fishing	1995	5,7	13,0	2,3	4,0	2,0
	1996	5,8	12,6	2,2	4,0	2,1
	1997	5,5	11,9	2,2	4,2	2,1
	1998	5,4	12,8	2,3	4,1	2,1
	1999	5,3	9,8	1,8	3,9	2,0
	2000	5,0	9,3	1,9	3,7	1,9
	2001	5,0	7,5	1,5	3,7	1,9
	2002	5,0	6,6	1,3	3,7	2,0
	2003	4,8	4,7	1,0	3,6	1,9
	2004	4,7	4,1	0,9	3,7	1,9
	2005	3,6	3,3	0,9	5,6	2,2
	2006	3,7	2,9	0,8	5,2	2,1
Manufacturing	1995	22,5	130,2	5,8	20,4	39,3
	1996	22,0	130,6	5,9	19,4	39,3
	1997	20,9	116,3	5,6	19,4	37,0
	1998	20,4	109,5	5,4	18,9	35,7
	1999	19,8	95,9	4,8	18,4	34,6
	2000	18,9	73,9	3,9	17,4	32,8
	2001	18,5	54,7	3,0	16,7	30,8
	2002	17,4	57,6	3,3	15,8	29,3
	2003	17,1	54,6	3,2	15,5	28,4
	2004	17,1	45,0	2,6	15,0	27,6
	2005	16,6	35,8	2,2	14,1	26,0
	2006	16,4	32,2	2,0	13,7	25,0
Services	1995	8,8	23,2	2,6	65,0	49,1
	1996	8,6	22,1	2,6	65,7	49,1
	1997	8,6	19,4	2,3	65,1	50,7
	1998	8,6	17,9	2,1	64,9	51,8
	1999	8,6	16,9	2,0	64,7	52,9
	2000	8,4	15,0	1,8	64,7	53,9
	2001	8,5	13,4	1,6	64,5	54,3
	2002	8,0	14,6	1,8	65,1	55,3
	2003	8,0	13,1	1,6	66,0	56,9
	2004	8,0	12,0	1,5	66,8	57,8
	2005	8,0	9,6	1,2	66,3	59,2
	2006	8,1	9,6	1,2	67,3	60,3
Total economy	1995	11,6	61,3	5,3	100	100
	1996	11,3	61,0	5,4	100	100
	1997	11,0	54,5	5,0	100	100
	1998	10,8	51,3	4,8	100	100
	1999	10,6	45,3	4,3	100	100
	2000	10,0	35,6	3,5	100	100
	2001	10,0	27,2	2,7	100	100
	2002	9,4	28,4	3,0	100	100
	2003	9,3	26,9	2,9	100	100
	2004	9,3	22,7	2,5	100	100
	2005	9,0	18,6	2,1	100	100
	2006	9,0	17,0	1,9	100	100

Source: Own calculations based on *Quadros de Pessoal* , GEP, MTSS.

Note: Done for sectors at one letter level of the Portuguese Classification of Economic Activities (CAE Rev. 2.1.). Average firm size is calculated as the ratio of the number of employees over the number of active employer enterprises.